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Book Reviews

Biology and management of rice insects, ed. E. A. Heindrichs, John Wiley and Sons, Ltd, Chichester, 1994, x + 779 pp., price £69.00.
ISBN 0-470-21814-2

It is easy to forget how dependent the majority of the world's population is on rice. This one crop constitutes half of the diet of more than 1.6 billion people and between a quarter and half of the diet of at least a further 400 million. As insect pests are one of the major constraints on rice production a new book on the biology and management of pests of rice, edited by the former head of the Department of Entomology at IRRI, has to be seen as a significant event. This book sets itself the ambitious task of providing a comprehensive treatment of rice entomology under a single cover.

Enormous changes in rice production technology have taken place over the past thirty years. The first high yielding 'green revolution' varieties in the 1960s were rapidly followed by varieties combining varying degrees of pest resistance or tolerance with increased vigour and earlier maturation. Coupled with the improving infrastructure in many Asian countries this has rapidly led to intensified production through double-cropping, maximisation of potential yield by application of fertiliser and pesticides, and mechanism of a number of the operations associated with rice cultivation. Japan, for example, increased yield from approximately 4 t ha^{-1} in 1960 to 5 t ha^{-1} at the beginning of the present decade, an increase which correlates well with fertiliser and pesticide input.

Heindrich's book covers the major components of rice entomology through a set of contributed articles, many written by former colleagues at IRRI, covering taxonomic aspects of rice insect pests and their natural enemies, the various components of pest control (host plant resistance, cultural and physical control measures, maintenance of control through natural enemies, and the use of insecticides), and two contrasting case studies of rice IPM implementation—the Japanese model, and IPM in Colombia. The recurring theme is the need to preserve the natural control mechanisms exercised on particular pest species by the local populations of predators and parasitoids. Intensive use and misuse of broad-spectrum insecticides in the 1960s and 1970s has been blamed for locally damaging outbreaks of brown planthopper and increasing resistance levels to organophosphorus and carbamate insecticides in other pest species.

The chapters concerned with the taxonomy and biology of pest species and their natural enemies will be useful to professional entomologists—the taxonomic key provided by A. Barrion and J. Litsinger takes up to 350 of the 748 text pages and claims to be the first covering essentially all the world's important rice pests and their natural enemies. Chapters concerned with fundamental biological principles, such as the excellent essay by Michael Loevinsohn on changes in pest populations resulting from changes in cropping practice and agricultural environment, provide valuable and authoritative sources; those dealing with 'current' pest management practice, however, are likely to date rapidly. I have put 'current' in quotes because it is noticeable that there has been a considerable delay between the completion of this book and its publication. The latest references quoted by any contributor are dated 1989; some chapters do not extend their coverage even to this date. Consequently this is not the book to refer to if you are looking for an assessment of the latest pest-resistant varieties, the impact of biotechnology on host plant resistance or of the new groups of selective insecticides on rice IPM. Some contributors provide historical reviews which pursue their subject back to the beginning of the century or earlier, and while this information is interesting it can mostly be found elsewhere.

G. le Patourel

Pasture doctor: a guide to diagnosing problems in pastures. J. Millar, Butterworth-Heinemann, Oxford, 1995, ix + 62 pp., price £11.99
ISBN 0 7506 8930 7

The maintenance of high quality pasture is an essential feature of a successful grazing industry. However, the management of pastureland is probably one of the most complex of agricultural tasks, with the correct diagnosis

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of a problem often being difficult and frequently accompanied by a confusing variety of possible solutions. Pasture Doctor, written specifically for farmers and land managers of perennial pastureland in south-eastern Australia, is an excellent, straightforward guide that enables reliable first-level diagnoses to be made. In just 62 pages there is a wealth of practical information on the major problems that occur in improved or disturbed pastures, with recommendations for their improvement or control. The book is divided into three sections that take the reader easily from an overall assessment of the pasture, focusing upon general disorders, through an adequately detailed description of weeds and their control, to conclude with a concise but accurate account of individual plant symptoms of insect damage, disease and mineral deficiency. Over 130 excellent photographs illustrate the specific disorders. A minor criticism is that the lack of annotation on the general photographs in the introductory sections introduces a small mystery into an otherwise clear text.

Jo Millar's expertise as a Pastures Extension Officer is effectively communicated and the book will give valuable assistance in determining appropriate management strategies. However, given that the book is a practical guide to farmers, I was disappointed that it is not a convenient size to carry and use in the field nor does it appear to be very robust—my copy disintegrated with no encouragement whatsoever.

H. G. Hewitt

National Rivers Authority Water Quality Series No. 26: Pesticides in the aquatic environment, ed. National Centre for Toxic and Persistent Substances (TAPS), HMSO, London, 1995, x + 92 pp., price (UK) £25.00
ISBN 0 113101 01 5

Few issues related to pesticide use have created as much public concern in recent years as that of pesticide residues in the sources of our drinking water, yet there has been little quantitative information about the scale of the problem in the UK. This publication by the former National Rivers Authority (now part of the Environment Agency) is the first comprehensive report on the occurrence of pesticide residues in surface and ground waters in England and Wales. Drawing on analytical data from an extensive regional monitoring exercise carried out in 1992–1993 at 3,500 sites, it provides detailed information about the incidence of pesticides in natural waters above Environmental Quality Standards or exceeding the 0.1 μg litre^{-1} standard set by the EC Drinking Water Directive. Application of the latter limit is relevant in the UK both because the NRA is required to take action to safeguard water resources when notified by water companies of a breach of the limit and because a large proportion of groundwater sources used as supplies for drinking water currently have no treatment facilities to remove pesticides.

The report confirms the main sources of pesticide contamination as industrial discharge (particularly from wool processing), careless disposal of sheep dip, run-off from amenity applications and from agricultural land, and seepage to ground water following agricultural use. Standards from the statutory EC 'Dangerous Substances' priority pesticides were exceeded at less than 1% of sites, the most frequent culprit being total hexachlorocyclohexanes, and the most common breaches of non-statutory Environmental Quality Standards (proposed for the most part by the NRA) resulted from discharge of trade effluents containing the sheep dip insecticide diazinon following wool processing.

Maps and tables are used to identify sites exceeding limits for monitored pesticides on a regional basis and a useful summary of current legislation relating to pesticides in the aquatic environment is given. This report will provide an authoritative source of information for many parties with interests in water quality, pesticide regulation and environmental fate. It is to be hoped that it will be the first in a continuing series that place such data in the context of continuing efforts to improve the quality of our natural waters by controlling effluents and modifying pesticide use patterns. The report makes 20 recommendations designed to reduce pesticide pollution and promote further research in this area.

G. le Patourel

Insects: chemical, physiological and environmental aspects 1994, ed. D. Konopinska, G. Goldsworthy, R. J. Nachman, J. Nawrot, I. Orchard, G. Rosinski & W. Sobotka, Wydawnictwo Uniwersytetu Wroclawskiego, Wroclaw, Poland, 1995, 350 pp., price US$60.00.
ISBN 83 229 1303 6

This book is the proceedings of the 1st International Conference with this title, held 26–29 September, 1994 at Ladek-Zdroj, Poland.

Following the collection of 12 plenary lectures, the text is divided into four additional sections on (1) Aspects of insect physiology, (2) Insect peptides, (3) Juvenoids and allato-regulating hormones and (4) Practical aspects. The techniques of molecular biology, combined with modern methods for peptide sequencing and synthesis, have had a profound effect on progress in insect biochemistry. This is evident in the plenary lectures, which provide a snapshot of current research on the energy-mobilising adipokinetic hormones, peptides and biogenic amines controlling visceral muscle and prothoracicotropic hormones regulating moulting in lepidoptera. The biosynthesis of insect sex pheromones continues to attract much attention and specific examples are detailed, along with useful reviews on the pro-